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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,383	10/20/2003	Mark Hornung	0796/71238	6543

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EXAMINER	
THOMPSON, JEWEL VERGIE	
ART UNIT	**PAPER NUMBER**
2855	

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,383	HORNUNG ET AL.	
	Examiner	Art Unit	
	Jewel V Thompson	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-19* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/20/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgement is made of the Priority filed October 20, 2003, which has been made record of and placed in the file.

Claim Objections

2. Claims 1- 19 are objected to because of the following informalities:

Claims 1-3 6, 10, 11 and 15 disclose "a heating for generating". Examiner believes that the applicant has meant to disclose "a heater for generating".

Claim 13 discloses "at least two of the said devices for measuring...". There is no antecedent basis for the "at least two of the said devices for measuring...". Only "one device" is disclosed Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Stulen et al (5,980,102).

Regarding claims 1 and 15, Stulen et al teaches a device and method for measuring the flow m and at least one material parameter k of a fluid (col. 1, lines 13-15), wherein the material parameter k depends on a thermal conductivity of the fluid (col. 5, lines 17-33), the device comprising a heating (12) for generating in the fluid, a region having non-homogeneous temperature (col. 5, lines 34-38), several sensors (14-24) for determining at least two measured quantities t1, t2 depending on fluid temperatures in a range of influence of the heating (col. 6, lines 5-6); wherein the measured quantities are different functions t1 (col. 9, lines 8-9) = f1(m, k) and t2 (col. 4, lines 54-55) = f2(m, k) of the flow m and the material parameter k; a processing circuit (36) for determining the flow m and the material parameter k from the measured quantities t1, t2 (col. 4, lines 48-51).

Regarding claim 2, Stulen et al teaches the sensors comprise a first and second temperature detector (14 and 24), wherein the temperature detectors are arranged beside the heating (fig. 1) and wherein the measured quantities t1 and t2 are derived from signals of the two temperature detectors (col. 4, lines col. 4, lines 49-50 and col. 6, lines 54-62).

Regarding claim 3, Stulen et al teaches the first temperature detector is arranged before the heating and the second temperature detector is arranged after the heating (fig. 1).

Regarding claim 4, Stulen et al teaches the measured quantity t2 corresponds to the fluid temperature at the second temperature detector (24).

Regarding claim 5, Stulen et al teaches the measured quantity t1 corresponds to a difference between the fluid temperatures at the two temperature detectors (col. 6, lines 54-62).

Regarding claim 6, Stulen et al teaches a fluid temperature detector arranged outside an area of influence of the heating (fluid temperature (16) is placed before the heater, therefore is not influenced by the heater), wherein the processing circuit is designed for using a signal from the fluid temperature detector when determining the material parameter k and/or the flow m (36).

Regarding claim 10, Stulen et al teaches exactly one heating (12).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stulen et al in view of Miura et al (4,693,116).

Regarding claim 7, Stulen et al fails to teach a semiconductor chip, wherein the heating and the sensors are integrated on the semiconductor chip. Miura et al teaches a

semiconductor chip (613) comprising heater (613a) and sensors (613b and 613c) integrated on the semiconductor chip (fig. 4a). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the semiconductor chip comprising the integrated heater and sensor of Miura et al in the flow meter of Stulen et al for the purpose of allowing the heat to transfer through the semiconductor chip as well as the air stream so as to get an even flow of heat.

Claim Rejections - 35 USC § 103

5. Claims 8, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stulen et al in view of Inushima et al (6,550,325).

Regarding claims 8, 14 and 16, Stulen et al fails to teach mixing at least two fluids with different thermal conductivities. Inushima et al teaches in col. 25, lines 31-51 that heat is applied to the fluid in pulse form to evaluate the different fluids; and different fluids generally have different thermal conductivities and specific heat, different fluids remove heat from the thin film material in different quantities and at different rates. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the basic operation process of Inushima et al in the apparatus of Stulen et al for the purpose of determining that different fluids can be distinguished form each other, therefore, the flow rate can be accurately determined.

Claim Rejections - 35 USC § 103

6. Claims 9, 11, 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sultan et al in view of Lacey (5,379,630).

Regarding claim 9, Sultan et al fails to teach the material parameter k is the thermal conductivity of the fluid. Lacey teaches in col. 1, lines 6-10 that the invention relates to thermal conductivity measurement devices, and in particular, to precision measurement devices for measuring the thermal conductivity of a fluid, such as gas. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the thermal conductivity conductor of Lacey in the flow meter of Sultan et al for the purpose of measuring the thermal conductivity of a fluid in order to detect compounds within the fluid (col. 1, lines 9-10, Lacey); therefore the change in thermal conductivity of the flowing gas may be determined.

Regarding claim 11, Sultan et al teaches a heating (12) for generating in the fluid, a region having non-homogeneous temperature (col. 5, lines 34-38), several sensors (14-24) for determining at least two measured quantities t1, t2 depending on fluid temperatures in a range of influence of the heating (col. 6, lines 5-6); wherein the measured quantities are different functions t1 (col. 9, lines 8-9) = f1(m, k) and t2 (col. 4, lines 54-55) = f2(m, k) of the flow m and the material parameter k; a processing circuit (36) for determining the flow m and the material parameter k from the measured quantities t1, t2 (col. 4, lines 48-51. Sultan fails to teach at least one device for measuring a mixing ratio k of the two fluids and a flow m of the mixed fluids and a flow

m of the mixed fluids. Lacey teaches in col. 1, lines 1-39 that when a compound is mixed with the carrier gas, the thermal conductivity of the mixture is usually different from that of the pure carrier gas. A thermal conductivity detector provides a measure of the change in the thermal conductivity of the carrier. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the mixer of Lacey in the apparatus of Stulen et al for the purpose of providing a measure of the presence and amount of various compounds (col. 1, lines 37-39, Lacey)

Regarding claims 12 and 17, Stulen et al fails to teach a control unit for monitoring and/or regulating the mixing ratio. Lacey teaches a processor (230) which provides the necessary calculations, using V(a) and the known resistance values, to output a signal at terminal 240 to a recorder 242 or other device based on the change in power dissipated by the sensor during a cycle. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the processor of Lacey in the flow meter of Stulen et al for the purpose of controlling the timing and magnitude of the signal which determines the thermal conductivity of the effluent flowing past the sensor.

Claim Rejections - 35 USC § 103

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stulen et al in view of Adams et al. (4,712,996)

Regarding claim 18, Stulen et al fails to teach the mixture is fed to a burner and the material parameter k is used for controlling or monitoring the burner. Adams teaches a gas burner system with a mass flow sensor wherein a mass flow sensing circuit includes a sensing device connected fluidically in an air flow path between air and a low pressure portion of a fluid flow path controlled by a blower (col. 2, lines 8-32). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the burner of Adams et al in the apparatus of Stulen et al for the purpose of establishing the predetermined temperature difference in the presence of the proper value of mass flow of air through the sensing device (col. 2, lines 29-32)

Claim Rejections - 35 USC § 103

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stulen et al in view of Fujiwara et al. (6,684,694)

Regarding claim 19, Stulen et al fails to teach the mixture is fed to a fuel cell and the material parameter k is used for controlling or monitoring the fuel cell. Fujiwara et al teaches the mixture is fed to the fuel cell (73), (col. 13, lines 5-11). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the fuel cell system of Fujiwara et al in the apparatus of Stulen et al for the purpose of measuring the flow rates of the fuel gas and air flowing through the pipes I n

order to maintain an optimum mixing ratio in the fuel reactor (col. 13, lines 8-11, Fujiwara et al)

Allowable Subject Matter

9. Claim 13 would be allowable if rewritten to overcome the rejection(s) under claim objections, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jewel V Thompson whose telephone number is 571-272-2189. The examiner can normally be reached on 7-4:30, off alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jewel V. Thompson

Jvt
November 10, 2004